PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference IB-2012PCT	FOR FURTHER ACTION	See item 4 below		
International application No. PCT/US2004/033581	International filing date (day/month/year) 12 October 2004 (12.10.2004)	Priority date (day/month/year) 22 March 2004 (22.03.2004)		
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237				
Applicant THE REGENTS OF THE UNIVERSITY OF CALIFORNIA				

1.	This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).				
2.	This REPORT consists of a total of 4 sheets, including this cover sheet.				
	In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.				
3.	. This report contains indications relating to the following items:				
	Box No. I	Basis of the report			
	Box No. II	Priority			
	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability			
	Box No. IV	Lack of unity of invention			
	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement			
	Box No. VI	Certain documents cited			
	Box No. VII	Certain defects in the international application			
	Box No. VIII	Certain observations on the international application			
4.	4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis.2).				
			Date of issuance of this report 26 September 2006 (26.09.2006)		
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland		mbettes	Authorized officer Agnes Wittmann-Regis		
L	Facsimile No. +41 22 338 82 70 e-mail: pt06@wipo.int				
roill P	Form PCT/IB/373 (January 2004)				

PATENT COOPERATION TREATY

From the

INTERNATIONAL SEARCHING AUTHORITY

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	rec'd	F	Ŋ	JUN	2006
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WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

			(PCT Rule 43bis.1)		
•		Date of mailing (dayimonthivear)	27 JUN 2006		
Applicant's or agent's file reference		FOR FURTHER			
IB-2012PCT			See paragraph 2 below		
	International filing date	(day/month:year)	Priority date (day/month/year)		
PCT/US04/33581	12 October 2004 (12.10	.2004)	22 May 2004 (22.05.2004)		
International Patent Classification (IPC) or					
1PC: C30B 7/00(2006.01).11/00(2006.01) USPC: 117/2.3.25					
Applicant					
THE REGENTS OF THE UNIVERSITY	OF CALIFORNIA				
1. This opinion contains indications relat	ing to the following iten	ns:	,		
Box No. I Basis of the o	Box No. I Basis of the opinion				
Box No. II Priority					
Box No. III Non-establis	hment of opinion with re	egard to novelty, inver	ntive step and industrial applicability		
Box No. IV Lack of unity	Lack of unity of invention				
Box No. V Reasoned state applicability:	Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement				
Box No. VI Certain docu	Certain documents cited				
Box No. VII Certain defea	Certain defects in the international application				
Box No. VIII Certain obse	Certain observations on the international application				
2. FURTHER ACTION					
International Preliminary Examining	g Authority ("IPEA") one IPEA and the chosen	except that this does IPEA has notified th	be considered to be a written opinion of the not apply where the applicant chooses an le International Bureau under Rule 66.1bis(b) ered.		
If this opinion is, as provided above. IPEA a written reply together, where of Form PCT/ISA/220 or before the e For further options, see Form PCT/IS	appropriate. with amen xpiration of 22 months f	dments, before the ex	PEA. the applicant is invited to submit to the piration of 3 months from the date of mailing whichever expires later.		
3. For further details, see notes to Form PCT/ISA/220.					
Name and mailing address of the ISA/US Date of completion of this opinion Authorized of Floor			Authorized of Foot		
Mail Stop PCT. Attn: ISA/US Commissioner for Patents	13 June 2006		Felisa Hizeshew		
P O Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201 Telephone No. (571) 272-1700					

Form PCT/ISA/237 (cover sheet) (April 2005)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.	
PCT/US04/33581	

Box No	. I Basis of this opinion
1. With re	egard to the language. this opinion has been established on the basis of:
	the international application in the language in which it was filed
	a translation of the international application into which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).
2. With r invent	egard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed ion, this opinion has been established on the basis of:
a.	type of material
	a sequence listing
	table(s) related to the sequence listing
b.	format of material ·
	on paper
	in electronic form
c.	time of filing/furnishing
	contained in the international application as filed.
	filed together with the international application in electronic form.
	furnished subsequently to this Authority for the purposes of search.
3.	In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additi	ional comments:
	•

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No. PCT/US04/33581

Box No. V Reasoned statement under Rule 43 bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

CILC		
Novelty (N)	Claims 5.6.13-15 and 22-27	YES
	Claims 1-4,7-12 and 16-21	NO
Inventive step (IS)	Claims 5.6,13-15 and 22-27	YES
mvenuve step (15)	Claims 1-4,7-12 and 16-21	NO
Industrial applicability (IA)	Claims 5-6, 13-15 and 22-27	YES
moustrial applicatincy (th)	Claims 1-4,7-12 and 16-21	NO

2. Citations and explanations:

Claims 1-4, 7-12 and 16-21 do not meet novelty under PCT Article 33(2) as being anticipated by the Luo, et al reference (Journal of Crystal Growth (2005), 285(4), 534,540. Luo, et al teaches Cuprous oxide (Cuo) nanocrystals with tubular cubic and hollow cubic morphologies were obtained in simple solution-phase reduction system using nonionic surfactant octyhlphenyl ether (Triton X-100) as solvent. Uniform single crystal nanotubes with outer diameters or approximately 20 nm, an inner diameter of approximately 10 nm and lengths of approximately 120 nm were prepared through reduction of CuCl2 by glucose.

The difference being that Luo. et al does not teach a hollow nanocrysta, wherein: the shell comprises a material selected from the group consisting of Pt. ZnS. ZnSe. etc...). However, in the absence of unobvious results, it would have been obvious to one of ordinary skill in the art optimize and modify the process and product limitation in order to ensure proper orientation.

Form PCT ISA,237 (Box No. V) (April 2005)

(19) World Intellectual Property Organization International Bureau

NIPO OMPI

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- (25) Filing Language:

English

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(30) Priority Data: 60/555,590

22 March 2004 (22.03.2004) US

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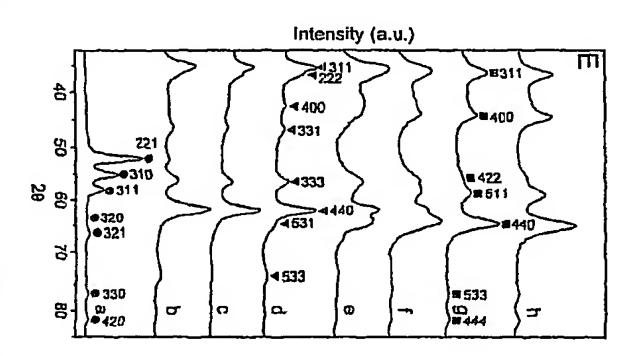
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (88) Date of publication of the international search report: 10 August 2006

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: HOLLOW NANOCRYSTALS AND METHOD OF MAKING



(57) Abstract: Described herein are hollow nanocrystals having various shapes that can be produced by a simple chemical process. The hollow nanocrystals described herein may have a shell as thin as 0.5 nm and outside diameters that can be controlled by the process of making.